

Claims

- [c1] 1. A food product cutting apparatus comprising:
cutting means comprising at least one cutting element disposed in a cutting plane that is not vertical;
means for individually delivering food products to the cutting means by causing the food products to free-fall through a feed passage and then free-fall through the cutting means entirely under the force of gravity and on a path that is approximately normal to the cutting plane;
and
means for contacting the food products and positioning the food products so that they free-fall on the path at a predetermined location within a cross-section of the feed passage as the food products free-fall through the feed passage and prior to encountering the cutting means so as to produce size-reduced products of substantially consistent size and shape.
- [c2] 2. The food product cutting apparatus according to claim 1, wherein the cutting means comprises multiple stationary blades disposed in the cutting plane and joined together at a point aligned with the predetermined location within the cross-section of the feed passage.

- [c3] 3. The food product cutting apparatus according to claim 1, wherein the cutting means comprises a cutting wheel rotating in the cutting plane.
- [c4] 4. The food product cutting apparatus according to claim 1, wherein the cutting means comprises:
multiple stationary blades disposed in the cutting plane and joined together at a point aligned with the predetermined location within the cross-section of the feed passage, the multiple stationary blades being configured and oriented for making substantially longitudinal cuts through the food products; and
a cutting wheel rotating in a plane beneath the multiple blades, the cutting wheel being configured and oriented for making transverse cuts through the food products.
- [c5] 5. The food product cutting apparatus according to claim 4, wherein the cutting wheel is disposed from the multiple stationary blades a distance of at least equal to a diameter of the food products.
- [c6] 6. The food product cutting apparatus according to claim 1, wherein the contacting and positioning means contacts only the outer peripheries of the food products as the food products free-fall through the feed passage.
- [c7] 7. The food product cutting apparatus according to claim

1, wherein the feed passage and the path therein are oriented substantially vertically.

[c8] 8. The food product cutting apparatus according to claim 7, wherein the contacting and positioning means comprises a plurality of resilient members extending radially inward into the feed passage toward a central axis thereof.

[c9] 9. The food product cutting apparatus according to claim 8, wherein the resilient members are uniformly distributed along an inner perimeter of the feed passage so as to center the food products passing therethrough at the central axis of the feed passage.

[c10] 10. The food product cutting apparatus according to claim 1, wherein the feed passage and the path therein are inclined from vertical.

[c11] 11. The food product cutting apparatus according to claim 10, wherein the feed passage and the path therein are oriented at an angle of 30 degrees from vertical.

[c12] 12. The food product cutting apparatus according to claim 10, wherein the feed passage has a planar surface.

[c13] 13. The food product cutting apparatus according to claim 12, wherein the contacting and positioning means

comprises the planar surface of the feed passage, and the feed passage is oriented so that gravity causes a planar surface of each of the food products to contact the planar surface of feed passage as the food products pass through the feed passage.

[c14] 14. A method of cutting food product, the method comprising the steps of:

individually delivering food products to a cutting means comprising at least one cutting element disposed in a cutting plane that is not vertical by causing the food products to free-fall through a feed passage and then free-fall through the cutting means entirely under the force of gravity and on a path that is approximately normal to the cutting plane; and

contacting the food products and positioning the food products so that they free-fall on the path at a predetermined location within a cross-section of the feed passage as the food products free-fall through the feed passage and prior to encountering the cutting means so as to produce size-reduced products of substantially consistent size and shape.

[c15] 15. The method according to claim 14, wherein the cutting means comprises multiple stationary blades disposed in the cutting plane and joined together at a point aligned with the predetermined location within the

cross-section of the feed passage, the method further comprising the step of making approximately longitudinal cuts through the food products with the multiple stationary blades.

[c16] 16. The method according to claim 14, wherein the cutting means comprises a cutting wheel rotating in the cutting plane, the method further comprising the step of making transverse cuts through the food products with the cutting wheel as the cutting wheel rotates.

[c17] 17. The method according to claim 14, wherein the cutting means comprises multiple stationary blades disposed in the cutting plane and joined together at a point aligned with the predetermined location within the cross-section of the feed passage, and a cutting wheel rotating in a plane beneath the multiple stationary blades, the method further comprising the steps of cutting the food products in a longitudinal direction with the multiple stationary blades and then cutting the food products in a transverse direction with the cutting wheel, the food products passing completely through the multiple stationary blades before engaging the cutting wheel.

[c18] 18. The method according to claim 14, wherein only the outer peripheries of the food products are contacted as the food products free-fall through the feed passage.

- [c19] 19. The method according to claim 14, wherein the feed passage and the path therein are oriented substantially vertically and the contacting and positioning step comprises centering the food products at a central axis of the feed passage.
- [c20] 20. The method according to claim 14, wherein the feed passage and the path therein are inclined from vertical, and the feed passage has a planar surface that contacts a planar surface of each of the food products under the force of gravity as the food products pass through the feed passage.